

**COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Tidewater Regional Office**

STATEMENT OF LEGAL AND FACTUAL BASIS

HRSD-Chesapeake-Elizabeth WWTP
5332 Shore Drive, Virginia Beach, Virginia
Permit No.TRO-60431

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Hampton Roads Sanitation District (HRSD) has applied for a Title V Operating Permit for its Virginia Beach, Virginia facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact:_____

Date: 4/26/06

Air Permit Manager:_____

Date: 4/26/06

Deputy Regional Director:_____Date: 4/26/06

FACILITY INFORMATION

Permittee

Hampton Roads Sanitation District
PO Box 5911
Virginia Beach, VA 23471

Facility

Chesapeake-Elizabeth WWTP
5332 Shore Drive
Virginia Beach, Virginia

AFS ID Number: 51-810-00034

SOURCE DESCRIPTION

NAICS Code: 221320 – Sewage Treatment Facilities

NAICS Code: 562219 – Non-hazardous Waste Treatment and Disposal

The Chesapeake-Elizabeth Plant provides both primary and secondary municipal wastewater treatment for the Hampton Roads area, serving mainly Virginia Beach clients. The Chesapeake-Elizabeth Plant is rated to treat a design maximum average dry weather flowrate of 24 million gallons per day (mgd) and sized to accommodate an instantaneous wet weather peak hour flowrate of 48 mgd. The facility process units are grouped into four main functions: liquids management, solids handling, sludge incineration, and other combustion units.

Liquids management – all of the unit processes that treat the received wastewater prior to discharge to the Chesapeake Bay. These unit processes include the headworks (grit removal), aerobic treatment, secondary clarification, chlorine contact basin and sodium bisulfite injection.

Solids Handling – unit processes that treat liquid treatment by-product streams before disposal. These unit processes include grit handling, raw and secondary scum holding tank/concentrator, and gravity thickeners. Dewatering centrifuges, biosolids screw conveyors, ash storage/disposal, interceptor grit unloading.

Sludge incineration – two identical multi-hearth incinerators are used to dispose of dewatered solids from the solids handling sections. Each incinerator has seven hearths, a dedicated induced-draft fan and an air-pollution control train consisting of a precooler, venture, and an impingement scrubber. The incinerators use either natural gas or fuel oil to supplement combustion.

Other combustion units – a large plant electrical generator provides power for the entire plant if utility power is lost or if the Virginia Power Company requests the plant to reduce load. An administrative building heating boiler and hot water heater and small portable space heaters.

The facility is a Title V major source of NO_x, SO₂, and CO. This source is located in a marginal non-attainment area. The facility is permitted under a Minor NSR Permit, issued on 08/03/73.

North Carolina is an affected state.

COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, has been conducted. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	Pollutant Controlled	Applicable Permit Date
Incinerators						
I-1/I-2	2a 2b	Multi hearth sludge incinerators(natural gas or distillate oil as backup), 1973	16 burners rated at 2.7 MMBTU//hr each per incinerator. 36 dry tons/day (sludge) per incinerator	Pre-cooler with Venturi scrubber followed by impingement (tray) scrubber (water only). Air Pol & Sly Inc. Model 375-Slylimpjet.	PM/PM-10 (Odor)	08/03/73
Liquids Management						
L-1	3a 3b 3c 3d	Liquids Management, 1966	24 mgd (dry) (wastewater)	Two stage packed tower scrubber (water plus NaOCl and/or NaOH). Daniel Mechanical, Inc. Model Club 4450 (3a & 3b) 1998. DEI (3c & 3d) 2005.	(Odor)	
Plant Emergency Generators						
G-1	1	Plant diesel engine electrical generators, 1966	26.1 MMBTU/hr (3080 kW) each			
Solids Handling						
S-1	4	Solids Handling, 1973	24 mdg (dry) (wastewater)	Single stage packed tower scrubber (water plus NaOCl and/or NaOH or O ₃ /OH) Croll-Reynolds, Model 108T-6H, 1986.	(Odor)	

*The Size/Rated capacity is provided for informational purposes only, and is not an applicable requirement.

EMISSIONS INVENTORY

A copy of the 2004 emission inventory generated from CEDS is attached. Emissions are summarized in the following tables.

2004 Criteria Pollutants Actual Emission in Tons/Year					
Emission Unit	VOC	CO	SO ₂	PM10	NO _x
Incinerators	6.0	110.0	170.9	3.1	17.8
Liquids Management	7.8				
Generators	0.2	1.6	0.1	0.2	6.1
Solids Handling	8.6				
Total	22.6	111.6	171.0	3.3	23.9

EMISSION UNIT APPLICABLE REQUIREMENTS - Incinerators

Limitations

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

- 9 VAC 5-80-110 Permit Content
- 9 VAC 5-50-260 Standards for Stationary Sources
- 9 VAC 5-40-750 Standards for Particulate Matter (Incinerators)
- 9 VAC 5-50-80 Standards for Visible Emissions
- 9 VAC 5-60-70.E Designation of Emission Standards (Mercury)

The following Federal Regulations that have specific emission requirements have been determined to be applicable:

- 40 CFR 61 Subpart E NESHAP-Mercury

See also NSR permit issued 08/03/73. The VA new source standards for opacity (9 VAC 5-50-80) were not promulgated until 08/09/75 – some two years after the 08/03/73 permit was issued. The introduction to the new source standards (9 VAC 5-50-10) specify that the standards apply to all new source activity that has been conducted after March 17, 1972. The new source opacity standards are 20% with no more than one six-minute period not to exceed 30%, are the resultant values from the permit and Regulations that should be used for compliance.

Monitoring

The following Virginia Administrative Codes that have specific monitoring requirements have been determined to be applicable:

- 9 VAC 5-80-110 Permit Content
- 9 VAC 5-50-140 Standard for Odorous Emissions

The following Federal Regulations that have specific monitoring requirements have been determined to be applicable:

- 40 CFR 64 Compliance Assurance Monitoring

See also NSR permit issued 08/03/73.

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include fuel supplier certifications, sludge or stack test results for mercury emissions, PM stack test results with PM emission factors used, PM CAM records, VEE records, operating procedures, maintenance records, operator training records, daily (monthly average) dry ton biosolids feed rate to active incinerator(s).

Testing

The source conducted PM testing in 2003 and emissions were at 0.03 gr/dscf at 12% CO₂ for dry sludge feed rate up to 36 ton/day. PM testing will be required again if the feed rate exceeds 36 dry tons/day (monthly average) to assure the air pollution equipment can maintain compliance.

Subpart E, Para. 61.53(d) and 61.54, only requires an annual test for Hg if mercury emissions exceed 1,600 grams per 24-hour period—an incinerator stack test performed using Method 101A of 40 CFR 61, Appendix B; or the sludge be tested for mercury levels using Method 105 of 40 CFR 61, Appendix B. The source conducted Hg testing during in 2003 and emissions were 28.8 grams/day. The source is required to test the sludge for Hg under 40 CFR 503 every 60 days. (Most recent testing per letter from M. Feltner dated February 15, 2005, reports Hg results to be 16 grams/day.) Since all Hg past test results have been very low and with the 40 CFR 503 requirement of a continuing Hg sludge test every 60 days, no additional 40 CFR 61, Subpart E Hg compliance testing is required for the Title V cycle permit. This issue for more Subpart E testing will be reviewed again at the next renewal. Since the source is required to test if Hg emissions levels exceed 1,600 grams/24-hour period, the requirement for Hg testing was added if Subpart E proposed changes to the plant project the levels to exceed 1,600 grams/24-hour period.

Reporting

The permit includes reporting requirements for protocol, testing dates and results of stack tests conducted for PM or mercury and notifications for proposed plant changes that would potentially increase mercury emissions above 1,600 grams/24-hour period.

EMISSION UNIT APPLICABLE REQUIREMENTS – Liquids Management (L-1)

Limitations

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

- 9 VAC 5-80-110 Permit Content
- 9 VAC 5-50-80 Standards for Visible Emissions

EMISSION UNIT APPLICABLE REQUIREMENTS – Solids Handling (S-1)

Limitations

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

- 9 VAC 5-80-110 Permit Content
- 9 VAC 5-50-80 Standards for Visible Emissions

EMISSION UNIT APPLICABLE REQUIREMENTS – Electrical Generator (G-1)

Limitations

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

- 9 VAC 5-80-110 Permit Content
- 9 VAC 5-50-80 Standards for Visible Emissions

Monitoring

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

- 9 VAC 5-80-110 Permit Content

Recordkeeping

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

- 9 VAC 5-80-110 Permit Content

EMISSION UNIT APPLICABLE REQUIREMENTS – Petroleum Liquid UST for Solids Handling and Liquid Management (T-18 and T-22)

Recordkeeping

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

- 9 VAC 5-80-110 Permit Content

The following Federal Regulations that have specific emission requirements have been determined to be applicable:

- 40 CFR 60 Subpart Kb

Streamlined Requirements

The following conditions in the minor NSR permit of August 3, 1973, have been streamlined into the Title V permit:

- Condition 1. Progress reports for construction of incinerators were submitted until operations began. No further reporting is required.
- Condition 2. Stack testing of new incinerators was accomplished after operations began.
- Condition 3. Notifications of proposed stack testing was accomplished.
- Condition 4.i. Section IX of the Title V permit lists State-Only Enforcement issues. Odor is not only an issue for the incinerators but the entire facility (liquids management, solids handling, etc.). The source is complying with Article 5-2 for BACT on odor control for the incinerators by using the scrubber system to control PM on the incinerators. The CAM requirements for monitoring the incinerator scrubber system is a way to also monitor odor control for the incinerators. If PM emissions are minimized, odor is expected to be minimized.

The following conditions in 40 CFR 61, Subpart E have been streamlined out of the Title V permit:

Para 61.63 (d)(2)(i) and 61.54(a)(2): Initial testing of existing source. Source conducted this testing as required in the 1970's.

Para 61.55(a): Monitoring. Not required as source has no emissions at the specified level to require more testing.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

Comments on General Conditions

B. Permit Expiration

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.1-20.01:2 and §10.1-1185 of the *Code of Virginia*, and the "Department of Environmental Quality Agency Policy Statement NO. 3-2001".

This general condition cite(s) the Article(s) that follow(s):

Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Operating Permits for Stationary Sources

This general condition cites the sections that follow:

9 VAC 5-80-80. Application

9 VAC 5-80-140. Permit Shield

9 VAC 5-80-150. Action on Permit Applications

F. Failure/Malfunction Reporting

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four daytime business hours of discovery of the malfunction.

J. Permit Modification

This general condition cites the sections that follow:

9 VAC 5-80-50. Applicability, Federal Operating Permit For Stationary Sources

9 VAC 5-80-190. Changes to Permits.

9 VAC 5-80-260. Enforcement.

9 VAC 5-80-1100. Applicability, Permits For New and Modified Stationary Sources

9 VAC 5-80-1790. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas

9 VAC 5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

U. Malfunction as an Affirmative Defense

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation see the comments on general condition F.

This general condition cites the sections that follow:

9 VAC 5-20-180. Facility and Control Equipment Maintenance or Malfunction

9 VAC 5-80-110. Permit Content

Y. Asbestos Requirements

The Virginia Department of Labor and Industry under Section 40.1-51.20 of the Code of Virginia also holds authority to enforce 40 CFR 61 Subpart M, National Emission Standards for Asbestos.

This general condition contains a citation from the Code of Federal Regulations that follow:

40 CFR 61.145, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to demolition and renovation.

40 CFR 61.148, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to insulating materials.

40 CFR 61.150, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to waste disposal.

This general condition cites the regulatory sections that follow:

9 VAC 5-60-70. Designated Emissions Standards
9 VAC 5-80-110. Permit Content

STATE ONLY APPLICABLE REQUIREMENTS

The following Virginia Administrative Codes have specific requirements only enforceable by the State and have been identified as applicable by the applicant:

- 9 VAC 5-40-290 Existing Source Standards for Hydrogen Sulfide
- 9 VAC 5-60-220 Existing Source Standards for Toxics
- 9 VAC 5-40-140 Existing Source Standards for Odor
- 9 VAC 5-50-140 New Source Standards for Odor
- 9 VAC 5-60-320 New Source Standards for Toxics

INAPPLICABLE REQUIREMENTS

40 CFR 61, Subpart C, NESHAP for Beryllium. Subpart C was intended for a facility that uses beryllium or generates beryllium wastes and then disposes of it. Any beryllium found in the sludge is insignificant and incidental to main purposes of the sludge incinerators.

40 CFR 60, Subpart O, NSPS for Sewage Treatment Plants. Subpart O was effective June 11, 1973, for new or modified sludge incinerators. This plant began construction before this date--per 04/04/73 NSR permit.

40 CFR 63, Subpart VVV, NESHAPS for New and reconstructed major HAPS POTWs. This source is not a major source for HAPS.

9 VAC 5 Chapter 40, Article 8, Emission Standards for Fuel Burning Equipment. This does not apply to the incinerators. While the incinerator burners may use fuel oil to heat the sludge to combustion temperature, 9 VAC 5 Chapter 40, Article 8 does not apply to the incinerators. Rule 4-8 was written for external combustion fuel burning equipment. Rule 4-7 was specifically written with PM emission standards for incinerators. Since Rule 4-7 does not limit SO₂ emissions or reference Rule 4-8 applicability to incinerators, the PM and SO₂ standards of Rule 4-8 do not apply to the incinerators. The NSR permit has the same PM standard as stated in Rule 4-7. Rule 4-8 could have been reviewed during the permitting process in 1973 to help establish SO₂ emission standards for the incinerators in the NSR permit. Since the NSR permit did not list any SO₂ emission limits, Rule 4-8 can not be used to back fill SO₂ emission limits for the incinerators in the Title V permit. The Article 8 PM and SO₂ standards do not apply to the generator (G-1) either.

9 VAC 5 Chapter 40, Article 4, Emission Standards for General Process Operations. Rule 4-4 was written for general processes not covered by a specific type process listed in 9 VAC 5 chapter 40. 9 VAC 5-40-240 D states “the provisions of this article do not apply to affected facilities subject to other emissions standards in this part.” The Article 4 PM and SO₂ standards do not apply to the incinerators. Rule 4-7 was specifically written with PM emission standards from incinerators. Since Rule 4-7 does not limit SO₂ emissions or reference Rule 4-4 applicability to incinerators, the PM and SO₂ standards of Rule 4-4 do not apply to the incinerators. The Article 4 PM and SO₂ standards do not apply to the generator (G-1) either.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
ISU-CB-16a	Admin. Bldg. Heating Boiler (natural gas)	5-80-720 C.2.a	N/A	0.25 MMBTU/hr
ISU-CB-16b	Admin. Bldg. Water Heater (natural gas)	5-80-720 C.2.a	N/A	0.2 MMBTU/hr
ISU-T-24	Liquids Management gasoline UST	5-80-720 B.2	VOC	1,000 gal.
ISU-T-23	Liquids Management diesel UST	5-80-720 B.2	VOC	500 gal.
ISU-T-20	Solids Handling kerosene AST	5-80-720 B.2	VOC	275 gal.
ISU-T-22	Liquids Management diesel UST	5-80-720 B.2	VOC	20,000 gal.
ISU-T-18	Solids Handling distillate oil UST	5-80-720 B.2	VOC	20,000 gal.

¹The citation criteria for insignificant activities are as follows:

- 9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
- 9 VAC 5-80-720 B - Insignificant due to emission levels
- 9 VAC 5-80-720 C - Insignificant due to size or production rate

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

PUBLIC PARTICIPATION – Concurrent Review

The proposed permit will be placed on public notice in the Virginian-Pilot from March 15, 2006 to April 14, 2006.

Draft and proposed permit sent to affected state (NC) on: March 16, 2006

Draft and proposed permit to EPA: March 16, 2006

Comments: